AI Foundations → Modern AI

MAPPING ARTIFICIAL INTELLIGENCE: A MODERN APPROACH

TO LLMS, TRANSFORMERS, AND AGENTIC AI

AIMA Core Idea

Rational Agents

Perceive → Decide → Act

Maximize expected performance

Modern View

LLMs as policy approximators

Agent frameworks as control layers

Tools + memory + planning

Search & Problem Solving (AIMA)

State spaces

Heuristics

Goal-directed search

Modern Mapping

Chain-of-Thought

Tree-of-Thought

Plan-and-execute prompting

Knowledge Representation (AIMA)

Logic

Knowledge bases

Inference

Modern Mapping

Embeddings

Vector databases

Retrieval-Augmented Generation (RAG)

Probability & Uncertainty (AIMA)

Bayesian inference

Decision theory

MDPs / POMDPs

Modern Mapping

Stochastic LLM outputs

Context uncertainty

Agent policies over partial observations

Learning (AIMA)

Supervised learning

Reinforcement learning

Utility optimization

Modern Mapping

Self-supervised pretraining

RLHF (Reinforcement learning with Human Feedback)
DeepSeek

Preference optimization

Planning (AIMA)

Action models

Goal regression

Policy generation

Modern Mapping

Agent planners

Tool calling

Reflection and memory loops

Multi-Agent Systems (AIMA)

Cooperation

Competition

Game theory

Modern Mapping

Multi-agent LLM systems

Role-based agents

Negotiation and coordination

What AIMA Explains

Why AI works

What intelligence means

Normative foundations

What Modern AI Adds

Scale

Data-driven representations

Practical deployment

Key Takeaway

LLMs and agentic AI do not replace AIMA

They instantiate it at scale